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COURSE BROCHURE

# Surface Facility Debottlenecking and Capacity Review Training Course

4 – 8 October 2027
London

# Surface Facility Debottlenecking and Capacity Review Training Course

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Surface Facility Debottlenecking and Capacity Review is a 1-week training course for facilities, process and operations engineers on producing assets, built around one work product: a facility optimisation opportunity register. As reservoirs age, water cuts rise and new wells tie in, the limiting item on a plant keeps moving, and organisations that find it early recover throughput without new capital. Jupiter Prime Training delivers this course on surface facility debottlenecking.

## Why Surface Facility Debottlenecking Matters Now

Three forces shape surface facility debottlenecking today. Changing well streams push separators, heaters and compression trains away from their original design points. Pressure on emissions and fuel gas makes every extra megawatt of compression power a visible cost. Tight capital budgets mean a small modification or setpoint change must prove it releases barrels first. A plant that reads its constraints well defers expansion; one that guesses spends money on the wrong vessel. The course rests on established equipment rating methods and on management of change practice from process safety.

## Who Gains Most from Surface Facility Debottlenecking

- Facilities engineers who own vessel, piping and rotating equipment ratings
- Process engineers who maintain heat and material balances
- Operations engineers who set daily targets and operating limits
- Production technologists who link well deliverability to plant capacity
- Reliability engineers who judge whether equipment can carry a higher duty

An asset team that sends its process, facilities and operations engineers together gains most.

## Surface Facility Debottlenecking Capabilities

Participants leave able to trace a throughput limit from the wellhead manifold to the export meter and to rank the cheapest ways to lift it.

- Calculate separator gas and liquid handling limits from retention time and droplet settling — the vessel rerating decision
- Assess compressor operating points against surge, stonewall and driver power curves — the compression train loading decision
- Build a capacity map that locates the governing constraint of each processing train — the asset leadership agenda
- Test operating envelope changes for pressure, temperature and level setpoints — the shift supervisor and control room
- Weigh fuel gas, flaring and power savings against throughput gains — the emissions and energy owner
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Specify modification options with a screening estimate and risk note — the capital approval committee

## Key Surface Facility Debottlenecking Terms

- Bottleneck — the single equipment item or operating limit that caps the throughput of the whole processing train at a given time.
- Capacity map — a chart showing each item's rated and actual load.
- Retention time — the period liquid stays in a separator, setting how well oil, water and gas part.
- Surge line — the flow limit below which a centrifugal compressor becomes unstable.
- Operating envelope — the set of pressures, temperatures, levels and flows within which a unit runs safely and on specification.
- Specific energy consumption — the fuel or power used per unit of processed hydrocarbon.

## Surface Facility Debottlenecking Day by Day

## Day 1: Reading the Plant as a Capacity System

- Heat and Material Balance Reconciliation — Trusting Plant Data Before Rating
- Throughput Constraint Mapping — Locating the Governing Train Limit
- Well Stream Forecast Overlay — Anticipating Water Cut and Gas Ratio Shifts
- Design Basis Versus Current Duty Comparison — Spotting Overloaded Equipment
- Historian Trend Screening — Separating Real Limits from Operating Habit

## Day 2: Separation and Liquid Handling Limits

- Gas Load Factor Calculation — Rerating Vessels for Higher Gas Rates
- Liquid Retention and Weir Settings — Balancing Oil Quality Against Capacity
- Inlet Device and Internals Upgrades — Choosing Low-Cost Separator Revamps
- Produced Water Train Hydraulics — Clearing Skimmer and Flotation Limits
- Control Valve and Line Sizing Checks — Removing Hidden Hydraulic Restrictions

## Day 3: Compression and Rotating Equipment Capacity

- Compressor Performance Curve Reading — Placing the Operating Point Correctly
- Surge Margin and Recycle Review — Recovering Flow Lost to Recycle
- Driver Power and Ambient Derating — Planning for Hot-Weather Limits
- Suction Pressure Optimisation — Trading Wellhead Backpressure Against Horsepower
- Pump Curve and System Curve Matching — Rerating Export and Transfer Pumps

## Day 4: Operating Envelope and Energy Use

- Setpoint Envelope Testing — Widening Limits Without Raising Process Risk
- Heater and Exchanger Duty Review — Cutting Fuel Gas Per Barrel
- Flare and Vent Load Accounting — Turning Losses into Recovered Product
- Control Loop Tuning Audit — Holding Units Closer to True Limits
- Management of Change Screening — Approving Envelope Moves Safely

## Day 5: Practising the Facility Optimisation Opportunity Register

- Capacity Map Rebuild for a Case Plant — Confirming the Governing Constraint
- Separator and Compressor Rerating Exercise — Quantifying Released Throughput
- Energy Saving Option Scoring — Ranking Fuel and Power Reductions
- Screening Estimate and Risk Note Drafting — Preparing Options for Approval
- Facility Optimisation Opportunity Register Completion — Prioritising Modifications for Leadership

## Applying Surface Facility Debottlenecking After the Course

- Lead a capacity map session for one processing train using reconciled plant data and current well forecasts.
- Run a compressor surge margin and recycle review with the control room and record the flow that can be recovered.

## Surface Facility Debottlenecking Questions FAQ

### What is surface facility debottlenecking and why does it matter now?

Surface facility debottlenecking is the work of finding and lifting the equipment limit that caps plant throughput. It matters now because changing well streams, energy costs and tight capital push assets to release capacity from what they already own.

### Which roles gain most from surface facility debottlenecking skills?

Facilities, process and operations engineers on producing assets gain most. Production technologists and reliability engineers also benefit.

### How does a surface facility debottlenecking course differ from a general production operations course?

A surface facility debottlenecking course focuses on rating equipment and ranking modifications. A general production operations course covers how each unit runs day to day.

### What do you bring back from surface facility debottlenecking training?

You bring back a ranked set of capacity and energy options for your own plant. It includes rerating checks, envelope changes to test and screening estimates for asset leadership.

## Surface Facility Debottlenecking: The Way Forward

The facility optimisation opportunity register lists each constraint, the option that lifts it, the throughput or energy gain and a screening cost. Its first use is to choose which modification enters the next budget cycle. Asset leaders and engineers share it, and the capacity map behind it is worth rebuilding whenever the well forecast or water cut changes.